

The Effect of *Kaliandra* Natural Honey with Prostaglandin Levels in Adolescents

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ABSTRACT

Background: The aim of the study was determine the effect of *kaliandra* natural honey with prostaglandin levels in adolescents.

Methods: The study was conducted using a experimental study with one group pretest-posttest design. Data were collected in Polytechnic Ministry of Health of Indonesia and biomedical laboratory Faculty of Medicine, Universitas Andalas Padang City in January 2018-April 2019. The populations in this study were all adolescents with sample size 36 respondents with dysmenorrhea. Sampling was done with simple random sampling technique. Prostaglandin levels were examined with Human Elisa ebioscience kit. Data analysis used paired sample T test. A two-tailed *P*-value of <0.05 was considered statistically significant. All data were analysed using SPSS 21.0 program.

Results: The results of the analysis showed that before the intervention prostaglandin levels was 119.83 ± 113.84 pg/ml, and after the intervention prostaglandin levels was 105.06 ± 113.38 pg/ml. There was an effect of *Kaliandra* pure honey with prostaglandin levels in adolescents ($p < 0.05$).

Conclusion: This analysis confirmed effect of *kaliandra* natural honey with prostaglandin levels in adolescents. Based on the results of this study it is recommended to provide administration of *kaliandra* natural honey can reduce the degree of dysmenorrhea and prostaglandin levels, so it is very effectively used as an herbal treatment in dysmenorrhea during menstruation.

Keywords: Natural Honey, Prostaglandin, Dysmenorrhea

INTRODUCTION

Adolescence is a transition period from childhood to adulthood where the most dominant changes that occur in adolescent women is the arrival of the first menstruation. The first menstruation marks the beginning of the functioning of women's reproductive lives in determining the process of life. Menstruation is a physiological thing that occurs in women during the reproductive period, but often there is a problem during menstruation that is the occurrence of dysmenorrhea which results in decreased productivity in women of childbearing age, including adolescents. [1,2]

Primary dysmenorrhea is physiological in women of childbearing age, but young women who experience dysmenorrhea during menstruation can cause disruption of activities such as high rates of absence from school or work, social life limitations, academic performance, and sports activities and even psychologically sufferers of dysmenorrhea often experience irritable, easily offended, unable to concentrate, difficult to sleep, tired, and feel depressed, at school also experiences emotional changes with the occurrence of sensitive nature to the words of the teacher or friend. [3,4]

At the time of dysmenorrhea there is an increase in excessive levels of prostaglandins which have a vasoconstriction effect that can cause ischemia in the uterine muscle causing dysmenorrhea. Menstrual pain that is felt is lost, the location of pain in the lower abdomen and spread waist and thighs. [5]

Honey contains iron, potassium, minerals, calcium, magnesium, copper, manganese, sodium, and phosphorus. Other substances are barium, zinc, sulfur, chlorine, vitamin C, vitamin B1, vitamin B2, vitamin B2, vitamin B5, vitamin B6, vitamin K, and various compounds, one of which is flavanoid. Honey is believed to reduce levels of prostaglandins and leukotrienes, thereby reducing or eliminating pain during menstruation. [1,5]

The aim of the study was determine effect of Kaliandra pure honey with prostaglandin levels in adolescents.

MATERIALS & METHODS

Study Design and Research Sample

The study was conducted using a experimental study with one group pretest-posttest design. Data were collected in Polytechnic Ministry of Health of Indonesia and biomedical laboratory Faculty of Medicine, Universitas Andalas Padang City in January 2018-April 2019. The populations in this study were all adolescents with sample size 36 respondents with dysmenorrhea. Sampling was done with simple random sampling technique.

Operational Definitions

The variables of this study included independent variable were kaliandra natural honey administration. Dependent variable was prostaglandin levels.

Data Collection Technique

In the study sample, 25 ml kaliandra natural honey was given and then dissolved in a glass of plain water as much as 250 ml, which began on the first day before menstruation until the first day of menstruation. After intervention in the study subjects blood was taken as much as 3 cc in the vein mediacana cubiti. Prostaglandin

levels were examined with Human Elisa ebioscience kit. This study was approved by the Ethical Committee of Universitas Negeri Padang, West Sumatera Indonesia.

Data Analysis

The quantitative variables were recorded as frequency and percentage. Data analysis used paired sample T test. A two-tailed *P*-value of <0.05 was considered statistically significant. All data were analysed using SPSS 21.0 program.

RESULT

Characteristic of respondents (Table 1).

Table 1: Characteristic of respondents

| Variables | f | % |
|---------------------------|----|------|
| Age (years) | | |
| 18 | 13 | 36.1 |
| 19 | 13 | 36.1 |
| 20 | 10 | 27.8 |
| Menarche (years) | | |
| 11 | 2 | 5.6 |
| 12 | 8 | 22.2 |
| 13 | 13 | 36.1 |
| 14 | 13 | 36.1 |
| Nutritional status | | |
| Underweight | 4 | 11.1 |
| Normal | 17 | 47.2 |
| Overweight | 15 | 41.7 |
| Total | 36 | 100 |

Table 1 known less than half of respondents were 18 years (36.1%), 19 years (36.1%) and 20 years (27.8%). Less than half of respondents age at menarche were 13 years and 14 years (36.1%). Less than half of respondents nutritional status was normal (47.2%).

The effect of *Kaliandra* natural honey with prostaglandin levels in adolescents (Table 2).

Table 2: The effect of *Kaliandra* natural honey with prostaglandin levels in adolescents

| Variables | n | Prostaglandin levels (pg/ml) | p-value |
|-----------|----|------------------------------|---------|
| | | Mean ± SD | |
| Pretest | 36 | 119.823 ± 113.84 | 0.001 |
| Posttest | 36 | 105.06 ± 113.38 | |

Table 2 showed that before the intervention prostaglandin levels was 119.83 ± 113.84 pg/ml, and after the intervention prostaglandin levels was 105.06 ± 113.38 pg/ml. There was an effect of *Kaliandra*

pure honey with prostaglandin levels in adolescents ($p < 0.05$).

Frequency change in prostaglandin levels in adolescents after giving *Kaliandra* natural honey (Table 3).

Table 3: Frequency change of prostaglandin levels in adolescents after giving *Kaliandra* natural honey

| Frequency change of prostaglandin levels in adolescents | f | % |
|---|----|------|
| Decrease | 26 | 72.2 |
| Not change | 1 | 2.8 |
| Increase | 9 | 25 |
| Total | 36 | 100 |

Table 3 there were change in prostaglandin levels after being given *kaliandra* natural honey which was obtained as many as 26 respondents (72.2%) experienced a decrease in prostaglandin levels, but there was no change in 1 respondents in prostaglandin levels (2.8%).

DISCUSSION

The results of the analysis showed that before the intervention prostaglandin levels was 119.83 ± 113.84 pg/ml, and after the intervention prostaglandin levels was 105.06 ± 113.38 pg/ml. There was an effect of *Kaliandra* pure honey with prostaglandin levels in adolescents ($p < 0.05$).

Previous study showed that honey can lower plasma concentrations of prostaglandins in normal individuals. Its inhibitory effect increased with time. The effects were higher at day 15 than at hour 3 after honey consumption. The sites of action could be at cyclooxygenase1 (COX-1) or COX-2, or both; this topic needs further investigation. Recently, it was found that artificial honey, made of glucose and fructose, increases prostaglandin concentrations. [6] Therefore, natural honey may contain raw materials that are capable of inhibiting prostaglandin synthesis. The ability of honey to lower concentrations of prostaglandins could explain many of its biological and therapeutic effects, particularly those related to inflammation, pain, immunity, the healing process, and wounds. Moreover, investigation of

therapeutic effects of honey on conditions in which large amounts of prostaglandins are produced might be promising. This study is the first to report a lowering effect of honey on plasma prostaglandin concentrations, and the findings may widen its clinical application.

Based on the analysis of researcher that there is a reduction in prostaglandin levels in adolescent girls after drinking *kaliandra* natural honey, this is because the honey content is good in the body, as well as flavonoids in honey that suppress excessive prostaglandin production during menstruation. Phenolic and flavanoid compounds are compounds that are generally known as antioxidant compounds. Previous study known on bioactive components in rubber honey, *kaliandra* honey, and honeycomb shows that *kaliandra* honey has the highest phenolic content of 557.93 mg GAE/100g, followed by rubber honey ole with a value of 385.63 mg GAE/100g, and honeycomb for 309.12 mg GAE/100g, while for the total flavanoid levels it was found that in *kaliandra* natural honey 156.27 ± 5.69 mg GAE/100g, rubber honey 63.40 ± 3.78 mg GAE/100g, honeycomb 47.25 ± 1.49 mg GAE/100g, but the laboratory results show that there are 9 girls who experience an increase in prostaglandin levels, this could be due to the fact that during the second cycle the levels of prostaglandin were more increased than during the cycle First, the increase in prostaglandin levels is caused by many other factors such as stress or fatigue when the teenage girl experiences menstruation. [7] Stressors can affect parts of a person, which can cause mental stress, changes in behavior and physical complaints, one of which is menstrual disorders. In its influence on menstrual stress patterns involving the neuroendocrinology system as a system whose role in female reproduction. Another study found who experience dysmenorrhea have a relationship with symptoms of depression, anxiety, and stress. [8]

Based on the results of this study it is recommended to provide administration

of *kaliandra* natural honey can reduce the degree of dysmenorrhea and prostaglandin levels, so it is very effectively used as an herbal treatment in dysmenorrhea during menstruation.

CONCLUSION

The conclusion of this study confirmed an effect of *kaliandra* natural honey with prostaglandin levels in adolescents. Based on the results of this study it is recommended to provide administration of *kaliandra* natural honey can reduce the degree of dysmenorrhea and prostaglandin levels, so it is very effectively used as an herbal treatment in dysmenorrhea during menstruation.

REFERENCES

1. Al-Waili NS, Boni NS. Natural honey lowers plasma prostaglandin concentrations in normal individuals. *Journal of Medicinal Food*. 2003; 6(2): 129–133.
2. Amani S, Kheiri S, Ahmadi A. Honey versus diphenhydramine for post-tonsillectomy pain relief in pediatric cases: a randomized clinical trial. *J Clin Diagn Res*. 2015;9(3):SC01-4.
3. Babarinde GO, Babarinde SA, Adegbola DO, Ajayeoba SI. Effects of harvesting methods on physicochemical and microbial qualities of honey. *J Food Sci Technol*. 2011; 48(5): 628–634.
4. Babil DA, Dolation M, Mahmoodi Z, Baghban AA. Comparison of lifestyles of young women with and without primary dysmenorrheal. *Electron Physician*. 2016; 8(3):2107-14.
5. Amiri Farahani EL, Hasanpoor-Azghdy SB, Kasraei H, Heidari T. Comparison of the effect of honey and mefenamic acid on the severity of pain in women with primary dysmenorrheal. *Arch Gynecol Obstet*. 2017; 296(2):277-283.
6. Al-Waili NS. Effects of honey solution on the urinary electrolytes and osmolality, urine volume and urinary total content of nitrite and prostaglandins. *Int Urol Nephrol*. 2005;37(1): 107-11.
7. Terrab A, Recamales AF, Hernanz D, Heredia FJ. Characterization of Spanish rhyme honeys by their physicochemical characteristics and mineral contents. *Food Chem*. 2004;88:537–542.
8. Tosi E, Ciappini M, Re E, Lucero H. Honey thermal treatment effects on hydroxyl-methylfurfural content. *Food Chem*. 2002; 77:71–74.

How to cite this article: Silaban TDS, Amir A, Defrin. The effect of *kaliandra* natural honey with prostaglandin levels in adolescents. *International Journal of Research and Review*. 2019; 6(9):210-213.
